

12

# **EUROPEAN PATENT APPLICATION**

21 Application number: **89300926.6**

51 Int. Cl.<sup>4</sup>: **H 01 S 3/06**  
**H 01 S 3/094**

22 Date of filing: **31.01.89**

30 Priority: **02.02.88 US 151396**

43 Date of publication of application:  
**09.08.89 Bulletin 89/32**

84 Designated Contracting States:  
**AT BE CH DE ES FR GB GR IT LI LU NL SE**

88 Date of deferred publication of search report:  
**08.11.89 Bulletin 89/45**

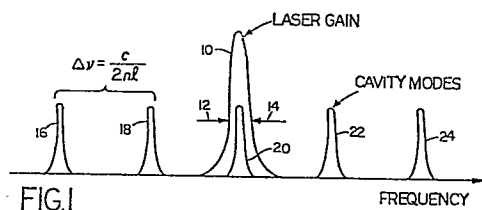
71 Applicant: **MASSACHUSETTS INSTITUTE OF TECHNOLOGY**  
**77 Massachusetts Avenue**  
**Cambridge, MA 02139 (US)**

72 Inventor: **Mooradian, Aram**  
**44 Grayson Road**  
**Winchester Massachusetts 01890 (US)**

74 Representative: **Maggs, Michael Norman et al**  
**Kilburn & Strode 30 John Street**  
**GB-London WC1N 2DD (GB)**

54 **Solid state microlaser.**

57 A solid state gain medium (32) is disposed between two mirrors (34, 36) to form a resonant cavity, the cavity length selected so that the gain bandwidth (12, 14) of the gain medium is less than the frequency separation of the cavity modes (16-24). By selecting this cavity length, only a single longitudinal mode will oscillate when the laser operates in a single transverse mode. The microlaser is optically pumped by any appropriate source such as a semiconductor injection laser or laser array. Suitable gain media are Nd:YAG and Nd pentaphosphate.





DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	REV. ECL, vol. 26, no. 9/10, September/October 1978, pages 1111-1128; M. SARUWATARI et al.: "Electroluminescent diode pumped miniaturized LiNdP4O12 lasers" * Page 1111; page 1125; figure 16 * ---	1-13	H 01 S 3/06 H 01 S 3/094
A	DIGEST OF TECHNICAL PAPERS, TOPICAL MEETING ON INTEGRATED OPTICS, New Orleans, Louisiana, 21st - 24th January 1974, pages MB7-1-MB7-4, Optical Society of America; D. CASTLEBERRY et al.: "A single mode 2.06 mum miniature laser" * Whole document * ---	1-13	
P,A	US-A-4 797 893 (G.J. DIXON) * Columns 3,4; figures 1,2 * -----	1-13	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			H 01 S
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 11-08-1989	Examiner MALIC K.
<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document			